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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,638	06/23/2005	Yasuhiro Yamakoshi	OGOSH34USA	5367
270. 7590. 10/16/2009 HOWSON & HOWSON LLP 501 OFFICE CENTER DRIVE SUITE 210 FORT WASHINGTON, PA 19034				
EXAMINER VELASQUEZ, VANESSA T				
ART UNIT		PAPER NUMBER		
1793				
NOTIFICATION DATE		DELIVERY MODE		
10/16/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@howsonandhowson.com

Office Action Summary

Application No.

10/540,638

Applicant(s)

YAMAKOSHI, YASUHIRO

Examiner

Vanessa Velasquez

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 12-17, 19, 21-24 and 29-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 12-17, 19, 21-24 and 29-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 20, 2009 has been entered.

Status of Claims

Claims 3-11, 18, 20, and 25-28 are canceled. Claims 1, 2, 12-17, 19, 21-24, and 29-33 are pending and presented for examination on the merits.

Claim Rejections - 35 USC § 112, First Paragraph

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 31-33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had

possession of the claimed invention. There is no support in the original disclosure for the limitation that the sputtering target has a non-oriented crystal structure.

Claim Rejections - 35 USC § 112, Second Paragraph

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 31-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation reciting that the sputtering target has a non-oriented crystal structure renders the claim indefinite and incomplete because orientation is spatially relative and must be interpreted with respect to an object, direction, plane etc. It is noted that the claim provides no guidance enabling one of ordinary skill in the art to ascertain how and/or with respect to what (object, direction, plane etc.) the non-orientation occurs. Appropriate clarification is requested.

Claim Interpretation

The Examiner acknowledges the use of the transitional phrase "consisting of" in independent claims 1, 2, and 13. The phrase will be interpreted per the guidelines in MPEP § 2111.03.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1, 2, 12-17, 19, 21-24, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goyal et al. (US 5,964,966).

Regarding claims 1, 2, 12-14, 17, 19, 21, 24, 29, 30, Goyal et al. teach a binary alloy substrate comprising nickel and at most 15 atomic percent of a Group VB metal (e.g., Ta) (col. 10, lines 17-21; col. 12, lines 22-25). It should be noted that the term "binary" means that only two elements (e.g., nickel and tantalum) need to be present in the alloy, thereby satisfying the restriction imposed by the transitional phrase "consisting of" as recited in the claim. The overlap between the ranges of the prior art and the claims creates a *prima facie* case of obviousness (MPEP § 2144.05). The nickel-base substrate may be annealed (heat-treated) above the recrystallization temperature (col.

10, lines 34-39) and has a grain size of less than 1000 microns, and more preferably less than 5 microns (col. 11, lines 37-41), which encompasses the claimed range. It should be noted that the limitation "for gate electrode" amounts to intended use and will not be accorded patentable weight (MPEP § 2111.01).

Goyal et al. teach that some alloy compositions taught therein may be deposited by sputtering without destroying the essence of the invention (col. 12, lines 36-38, 48-51, 59-61). Because the films of the some of the alloys are themselves produced from a sputter deposition technique, it would have been obvious to one of ordinary skill in the art to have formed those same alloys into sputtering targets for the purpose of depositing those alloys onto other substrates.

Further regarding claims 1, 2, 12-14, 17, 19, 21, 24, 29, 30, Goyal et al. are silent as to the impurity contents of the nickel-based alloys taught therein. However, it has been established that

"[p]urer forms of known products may be patentable, but the mere purity of a product, by itself, does not render the product unobvious. *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). Factors to be considered in determining whether a purified form of an old product is obvious over the prior art include whether the claimed chemical compound or composition has the same utility as closely related materials in the prior art, and whether the prior art suggests the particular form or structure of the claimed material or suitable methods of obtaining that form or structure. *In re Cofer*, 354 F.2d 664, 148 USPQ 268 (CCPA 1966)"

See also MPEP § 2144.04(VII). In the present case, it has been established that it would be obvious to form a sputtering target from the substrate material of Goyal et al.,

thus satisfying that the material may have the same utility as that defined in the claim. Additionally, the structure of the material of Goyal et al. (annealed and recrystallized) is the same as that of the claim. Given that the utility and structure -- both chemical and physical -- of the material of Goyal et al. satisfies that of the claim, purity would not be considered a patentable distinction over the prior art when high-purity is not only desired but also expected from sputtering targets and films formed from them.

Regarding claims 15, 16, 22, and 23, Goyal et al. is silent as to the magnetic permeability of the nickel alloy. However, it has been established that when the compositions of two products are identical or substantially identical, the two products are also expected to possess the same properties (MPEP § 2112.01 Section I). In the instant case, the substrate in Goyal et al. has a composition that encompasses the claimed ranges. Therefore, properties such as magnetic permeability would be expected to be same in both the claimed product and the product of Goyal et al.

9. Claims 1, 2, 12-17, 19, 21-24, and 29-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Segal et al. (WO 01/94660 A2).

Regarding claims 1, 2, 12-14, 17, 19, 21, 24, and 29-33, Segal et al. teach a material comprising at least 90 atomic percent of a matrix material (e.g., Ni) alloyed with 0.01-10 atomic percent of an alloying element (e.g., Ta) (page 8, lines 7-18). It is noted that the material requires a bare minimum of one matrix material and one alloying element, thereby satisfying the restriction imposed by the transitional phrase "consisting of" as recited in the claim. The material may be formed into a sputtering target (page 8,

lines 19-20). The overlap between the ranges of the prior art and the claims creates a *prima facie* case of obviousness (MPEP § 2144.05). The sputtering target may have a dynamically recrystallized structure via ECAE, be subsequently annealed (heat-treated), and possess grains that are less than about 50 microns in size (page 16, lines 9-12; page 19, lines 11-13). The texture of the target may be controlled to be substantially random (non-oriented) (page 13, line 23). It should be noted that the limitation "for gate electrode" amounts to intended use and will not be accorded patentable weight (MPEP § 2111.01).

Segal et al. are silent as to the impurity contents of the sputtering targets taught therein. However, it has been established that

"[p]urer forms of known products may be patentable, but the mere purity of a product, by itself, does not render the product unobvious. *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). Factors to be considered in determining whether a purified form of an old product is obvious over the prior art include whether the claimed chemical compound or composition has the same utility as closely related materials in the prior art, and whether the prior art suggests the particular form or structure of the claimed material or suitable methods of obtaining that form or structure. *In re Cofer*, 354 F.2d 664, 148 USPQ 268 (CCPA 1966)"

See also MPEP § 2144.04(VII). In the present case, Segal et al. teach that a material with a chemical composition overlapping that of the claims may be fashioned into a sputtering target as required by the claim. Furthermore, Segal et al. teach the same structure (heat-treated, recrystallized grains) as that defined by the claims, and suggests that impurity levels be as low as possible as seen in lines 14-21 of page 1,

wherein Segal et al. disclose that it is well known in the sputtering target arts that unwanted entities such as precipitates, particles, and inclusions should be minimized in target bodies because they negatively affect important sputtering target characteristics such as high resolution and uniformity of sputtered films (page 1, lines 14-21). Segal et al. further discloses that the sputtering targets of their invention should contain as few unwanted entities as possible (page 13, line 17). Therefore, the purity limitations in the claim fail to patentably distinguish the claimed invention from the prior art because it is already known to those of ordinary skill in the art that increased purity of target bodies is desirable and beneficial.

Further regarding claims 31-33, the claims are product-by-process claims because they recite process limitations even though the claims are drawn to a product. In product-by-process claims, it is the structure implied by the process limitations that will be considered, not the method steps themselves (MPEP § 2113). In the present situation, Segal et al. teach the claimed recrystallization texture (page 16, lines 9-12). Thus, the claimed product is obvious in view of Segal et al. because Segal et al. teach all structural limitations defined or implied by the claims.

Regarding claims 15, 16, 22, and 23, Segal et al. is silent as to the magnetic permeability of the nickel alloy. However, it has been established that when the compositions of two products are identical or substantially identical, the two products are also expected to possess the same properties (MPEP § 2112.01 Section I). In the instant case, the sputtering target in Segal et al. has a composition that encompasses

the claimed ranges. Therefore, properties such as magnetic permeability would be expected to be same in both the claimed product and the product of Segal et al.

Response to Arguments

10. Applicant's arguments filed July 20, 2009 have been fully considered but they are not persuasive.

First, Applicant argues that the claim requires that the target have a recrystallized texture, which by Applicant's definition is a non-oriented structure. Applicant states that Goyal's texture is biaxially structured (oriented), thus teaching away from the claim requirement. In response, a non-oriented structure is not a defining characteristic of a recrystallized structure. The conventional definition of recrystallization, taken from the ASM Metals Handbook is as follows:

○ recrystallization

- (1) The formation of a new, strain-free grain structure from that existing in cold-worked metal, usually accomplished by heating. (2) The change from one crystal structure to another, as occurs on heating or cooling through a critical temperature. (3) A process, usually physical, by which one crystal species is grown at the expense of another or at the expense of others of the same substance but smaller in size. See also crystallization.

It is noted that orientation is neither taught nor implied in the definition. It is understood that Applicant may define terms in a way that is different from their plain meaning; however, there must be clear support and a purposeful intent to do so (MPEP § 2111.01(IV)). Absent any disclosure by Applicant, the Examiner will continue to give the term "recrystallization" its plain and ordinary meaning as is known in the art. With

regard to the prior art, Goyal et al. teach that the nickel-base substrate may be annealed (heat-treated) above the recrystallization temperature (col. 10, lines 34-39), satisfying the claim limitations, and not teaching away from the claimed invention as Applicant asserts.

Second, Applicant argues that Goyal et al. fail to teach a Ni-Ta sputtering target because the materials that can be sputtered do not include Ni-Ta binary alloys. In response, Goyal's teaching of employing sputter deposition for one set of alloys (i.e., those alloys that cannot be deformed) does not preclude using sputter deposition techniques for another set of alloys (i.e., alloys that may be deformed). Goyal is merely disclosing an alternative method for producing substrates that must be used for those that cannot be deformed. Nowhere does Goyal teach that the alternative cannot work or cannot be applied to those alloys that can be deformed. It has been well held that "[a] reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments" *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989). See MPEP § 2123.

Third, Applicant argues that the Ni-Ta alloys of Goyal et al. do not possess the same magnetic characteristics as those of the claimed invention. Applicant cites how differences in manufacturing conditions (e.g., heat treatment), as demonstrated by comparative data in the specification, affect certain magnetic properties. In response, Applicant's reliance on comparative examples amounts to a recitation that the process used to produce the claimed product is the only way to obtain the claimed product. It

does not show that the product of the prior art actually differs from the claimed product, as it fails to compare the closest prior art with that of the claimed invention (MPEP § 716.02(e)).

Applicant's arguments with respect to the Shindo reference are moot because it is no longer relied upon to reject the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Velasquez whose telephone number is 571-270-3587. The examiner can normally be reached on Monday-Friday 9:00 AM-6:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached at 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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/Roy King/
Supervisory Patent Examiner, Art
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